LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

# Technical Memorandum

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**To:** Monika Boguszewski, Langan Senior Staff Scientist

**From:** Emily Strake, Langan Senior Project Chemist/Risk Assessor

**Date:** October 26, 2016

**Re:** Data Usability Summary Report
For 450 Union Street
Soil Samples Collected September 2016
Langan Project No.: 170301202

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of one soil sample collected in September 2016 by Langan Engineering and Environmental Services ("Langan") at the 450 Union Street site ("the Site"). The sample was analyzed by York Analytical Laboratories, Inc. (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, herbicides, metals, mercury (Hg), cyanide (CN-), hexavalent chromium (Cr6+), and percent solids (%S).

- VOCs by SW-846 Method 8260C
- SVOCs SW-846 Method 8270D
- PCBs by SW-846 Method 8082A
- Pesticides by SW-846 Method 8081B
- Herbicides by SW-846 Method 8151A
- Metals by SW-846 Method 6010C
- Mercury by SW-846 Method 7473
- Cyanide by SW-846 Method 9010C/9014
- Hexavalent chromium by SW-846 Method 7196A
- Percent solids by Method SM 2540G

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

**TABLE 1: SAMPLE SUMMARY**

| *SDG* | *Lab Sample ID* | *Client Sample ID* | *Sample Date* | *Analytical Parameters* |
|---|---|---|---|---|
| 16I0260 | 16I0260-01 | V01_0-1.5 | 9/07/16 | VOCs, SVOCs, PCBs, Pest, Herb Metals, Hg, CN-, Cr6+, %S |

**Validation Overview**

This data validation was performed in accordance with USEPA Region II "Low/Medium Volatile Data Validation, SOP No. HW-33A Revision 0; SOM0.2" (July 2015), "Semivolatile Data Validation, SOP No. HW-35A Revision 9; SOM02.2" (June 2015), "Polychlorinated Biphenyl (PCB) Aroclor Data Validation, SOP No. HW-37A Revision 0; SOM02.2" (June 2015), "Pesticide Data Validation, SOP No. HW-36A Revision 0; SOM02.2" (June 2015), "ICP-AES Data Validation, SOP No. HW-3a Revision 0; ISM02.2" (July 2015), "Mercury and Cyanide Data Validation, SOP No. HW-3c Revision 0; ISM02.2" (July 2015), USEPA Contract Laboratory Program "National Functional Guidelines for Inorganic Superfund Data Review" (USEPA-540-R-2016-001, September 2016) and the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review" (USEPA-540-R-2016-002, September 2016).

Validation includes review of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, field blank and trip blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

**R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

**J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

**UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.

**U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

**NJ –** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

**TABLE 2: VALIDATOR-APPLIED QUALIFICATION**

| *Client Sample ID* | *Analysis* | *Analyte* | *CAS #* | *Validator Qualifier* |
|---|---|---|---|---|
| V01_0-1.5 | VOCs | Benzene | 71-43-2 | UJ |
| V01_0-1.5 | SVOCs | Caprolactam | 105-60-2 | UJ |
| V01_0-1.5 | SVOCs | Acetophenone | 98-86-2 | UJ |
| V01_0-1.5 | SVOCs | Benzoic acid | 65-85-0 | UJ |
| V01_0-1.5 | SVOCs | Hexachlorocyclopentadiene | 77-47-4 | UJ |
| V01_0-1.5 | SVOCs | 3&4-Methylphenols | 65794-96-9 | UJ |
| V01_0-1.5 | SVOCs | 4-Nitroaniline | 100-01-6 | UJ |
| V01_0-1.5 | SVOCs | Dibenzofuran | 132-64-9 | UJ |
| V01_0-1.5 | SVOCs | Phenol | 108-95-2 | UJ |
| V01_0-1.5 | SVOCs | Pyridine | 110-86-1 | UJ |
| V01_0-1.5 | Wet Chem | Hexavalent Chromium | 18540-29-9 | UJ |
| V01_0-1.5 | Metals | Arsenic | 7440-38-2 | J |
| V01_0-1.5 | Metals | Nickel | 7440-02-0 | J |
| V01_0-1.5 | Metals | Thallium | 7440-28-0 | UJ |

**MAJOR DEFICIENCIES:**

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

**MINOR DEFICIENCIES:**

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

**VOCs by SW-846 Method 8260C:**

The continuing calibration analyzed on 9/14/16 at 8:52 displayed a %D greater than the control limit for benzene at 25.3%. The associated sample result is qualified as "UJ."

**SVOCs by SW-846 Method 8270D:**

The continuing calibration analyzed on 9/15/16 at 9:09 displayed a %D greater than the control limit for caprolactam at 88.8%, acetophenone at 98%, benzoic acid at 95.4% and hexachlorocyclopentadiene at 51.1%. The associated sample results are qualified as estimated.

LCS/LCSD BI60561 displayed recoveries outside of control limits for 2,3,4,6-tetrachlorophenol (140% and 171%), 3&4-methylphenols (0%), 4-nitroaniline (0%), acetophenone (0% and 1.66%), benzoic acid (0% and 1.44%), dibenzofuran (0%), phenol (2.98% and 0%), and pyridine (7.38%). In addition, the LCS/LCSD RPDs for 4-nitroaniline, acetophenone, benzoic acid, caprolactam, dibenzofuran, hexachlorocyclopentadiene and pyridine were greater than the control limit. The associated sample results are qualified as estimated.

**Metals by SW-846 Methods 6020A and 6010C:**

CRDL Standard Y6I1304 displayed recoveries outside of control limits for antimony (147%), arsenic (0%), nickel (56.2%), thallium (34.3%), zinc (2.77%), aluminum (0%), and sodium (41.2%). The associated results for arsenic, nickel, and thallium are qualified as estimated.

**Hexavalent Chromium by SW-846 Method 7196A:**

LCS/LCSD BI60331 recovered below the lower control limit at 72%. The associated sample result is qualified as estimated. In addition, the MS/SD recovered below the lower control limit at 72%. The spiked volume did not originate from the site.

**OTHER DEFICIENCIES:**

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

**Metals by SW-846 Methods 6020A and 6010C:**

Preparation blank sample Y6I1304 displayed positive detections for calcium and lead at 5.43 mg/kg and 0.361 mg/kg, respectively. The associated positive sample results were orders of magnitude greater than the blank amounts; qualification is not necessary.

Initial and continuing calibration blanks associated with sample batch Y6I1304 displayed positive detections for calcium and lead. The associated positive sample results were orders of magnitude greater than the blank amounts; qualification is not necessary.

**COMMENTS:**

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:

**Emily Strake**
Senior Project Chemist/Risk Assessor